Description and Analysis of Farming Systems in South Kordofan: A Case Study of Rashad Locality

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By

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Dedication

To my father, mother, sisters, brothers and my small family who gave a meaning to my life

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**Abbreviations**

ABS : Agricultural Bank of Sudan
CPA : Comprehensive Peace Agreement
EEC : European Economic Community
FAO : Food and Agriculture Organization
GDP : Gross Domestic Production
GOS : Government of Sudan
IFAD : International Fund for Agricultural Development
**Definition of Local Terms**

**Assida**: A porridge-like preparation, made from fermented or fresh batters of sorghum or millet flour.

**Baleela**: Traditional food consists of sorghum, sesame, groundnuts, beans and leaves of some plants.

**Gardud**: Non-cracking clay of pediments around the base of hills.

**Goz**: Sand dune, applied commonly to the fixed sand dunes occurring in the Darfur, Kordofan and northern regions.

**Jebel**: Hill or mountain; rocky hill outcrop.

**Jubraka**: Home garden, or backyard garden.

**Kantar**: A yield of crop equal to 141.523 kg.

**Karkade**: Rossel (Hibiscus sabdariffa).
Khor : A seasonal watercourse, usually smaller than a wadi, but both words are synonymously used in Sudan.

Kisra : An unleavened, fermented batter made from sorghum flour and water, cooked into thin sheets.

Merissa : A weak alcoholic drink made of fermented sorghum or millet flour.

Molokhiya : Leaves and tender shoots of young jute (Corchorus olitorius) plants

Mulah : Traditional sauce eaten with kisra or assida.

Nafier : Work party.

Remail : Dry sowing/planting

Sheikh : Village chief

Sheil : Credit, a system of money lending repaid at harvest with a specific quantity of crop yield equivalent to the loan.

Shermute : Sun dried strips of meat.

Wadi : Seasonal watercourse, usually wider than a khor, but both words are used almost synonymously in the Sudan

Weika : Okra (Hibiscus esculentus)

Zakat : Islamic religious tax

**ABSTRACT**

The main objective of the study was to describe and analyze the farming systems in Rashad Locality. The specific objectives were to describe and analyze the farming systems in the area, to study the socio-economic characteristics of the farmers in the different farming systems as well as conducting crop budget analysis for the farming systems to come up with recommendations for the development of these farming systems. The study also
covered the problems and constraints of agricultural production in the study area.

Primary and secondary data were obtained from different sources, books, reports and other published articles in websites. A multi-stage stratified random technique was used to select a sample size of 160 households, which represents 8% of the total population. Descriptive statistics e.g. means, frequencies, cross tabulations, percentages and t-tests were used to describe and analyze the socio-economic characteristics of households in the study area, and conduct enterprise and farm budget models for the farming systems in the study area.

The results of the study indicated that, average household size is 9 members for traditional system and 10 members for the semi-mechanized. For rainfed mechanized farming system, 40% or 4 household members were in age group less than 15 years, 20% in age group 16-25 years, 30% in age group 26-45 years. Then the last two age groups 46-55 years and 56 years and above are represented by 10% and zero of household members, respectively. Those engaged in farm labour represent 30% of total household size, out of this percentage, females represent 33%. For the rainfed traditional farming system, 55% of household members are in age group less than 15 years old, 23% in both age group 16-25 years old, and age group 26-45 years old.
Fifty six percent of total household members are engaged in farming activities with females representing 40%.

The study indicated that, average harvested area under the rainfed traditional farming system accounted for 18 feddans bringing crop intensity index to 33%. Household cultivated area decreases to 66% at harvest time, while it is 90% of the cultivated area under the rainfed semi-mechanized farming system, cropping intensity accounted for 68%.

The cropping pattern in the study area is dominated by four main crops, these are; sorghum, millet, sesame and groundnuts. Minor crops that could be consumed in the home or sold in the market are; cowpea, karkadeh, maize, okra and pumpkin. All sample households are cultivating sorghum and virtually 57% and 67% of the cultivated land was under sorghum for the rainfed traditional and semi-mechanized farming systems, respectively.

Off-farm income from categories listed under others (Gum Arabic tapping and petty trading) and income from semi-skilled labour are the major sources of income for the rainfed traditional farming system accounting for 31.9% and 28.9%, respectively. For the rainfed semi-mechanized farming system, income from skilled labour scored the highest percentage of 75.6% followed by cash sent from household members.

The results indicated that, all households for the rainfed traditional and semi-mechanized farming system
are involved in livestock raising. For the traditional system, 33%, 65%, 14% are reported owning cattle, goats and sheep, respectively. Camels and donkeys are kept as animals for burden and transportation; the well-off households tend to have camels 6%, while the majority is using donkeys 42%. Forty percent of households within the rainfed semi-mechanized farming system own cattle, 13% goats, 27% sheep and only 13% owning donkeys.

The comparison between the two main systems as reflected by gross margin and net income proved that, rainfed traditional farming system is far better than the rainfed semi-mechanized farming system e.g. gross output per feddan for the traditional system is almost three times that of the semi-mechanized system, while gross margin per feddan and net income are also nine times those calculated for the semi-mechanized farming system.

The study provided some recommendations, but the most important is that; focus should be on vertical production expansion through provision of improved agricultural inputs. Agricultural extension and agricultural research should play a key role to provide responsive farmers with quality information to increase their production.

بالله الرحمن الرحيم

الملخص

الهدف من الدراسة ووصف وتحليل النظم المزرعية المختلفة بمحلة رشاد بولاية جنوب كردفان بالتركيز على وصف وتحليل النظم المزرعية بالمنطقة ودراسة الخصائص الاقتصادية والاجتماعية وفقاً للنظم المزرعية المختلفة، بالإضافة إلى إجراء
تحليل للميزانية للمحاصيل بهذه النظييم المزرعييية بغييية الوصييول إلى التوصيات التي تساعد على تطوير وتحسين هذه النظم المزرعية. كما شملت الدراسة أيضاً المشاكل والمعوقات التي تواجه الإنتاج الزراعي عمومًا بالمنطقة.

تم جمع البيانات الأولية والثانية من المصادر المختلفة والتي شملت الكتب والتقارير والمراجع والمطبوعات المنشورة في مواقع الشبكة العنكبوتية (Websites)، وقد تم استخدام الأسلوب الطبقي العشوائي متعدد المراحل لاختيار 160 أسرة عشوائياً كعينة طبقية والتي تتمثل 8% من جملة السكان. تم استخدام منهج الإحصاء الوصفي لتحليل البيانات وشمل ذلك وصف وتحليل الخصائص الاجتماعية والاقتصادية للأسر بالمنطقة بالإضافة إلى تطبيق نموذج ميزانية المزرعة للنظام المزرعييية بمنطقة الدراسة.

أشارت نتائج الدراسة إلى أن متوسط حجم الأسرة 9 فرد للنظام المطرى التقليدي و10 فرد للنظام المطرى شبه الآلي. فيما يتعلق بنظام الزراعة الآلية المطرية التقليدي فقد تبين أن 40% من أفراد الأسرة ضمن الفئة العمرية أقل من 15 عام و 20% منهم من الفئة العمرية بين 16-25، بينما 30% منهم يقعون في الفئة العمرية 26-45 عام. أما بالنسبة للفئات العمرية 46-55 عام وأكثر من 56 عام فقد بلغت نسبة 10% و صفر على التوالي. إتضح أن العاملون بالزراعة يمثلون حوالي 30% من النسبة الكلية لعدد أفراد الأسرة وأن النساء يمثلن 33% من هذه النسبة. وبالنسبة للنظام المطرى التقليدي فتجد أن 55% من أفراد الأسرة يقعون ضمن الفئة العمرية أقل من 15 عام و 22% منهم يقعون في كل من الفئة العمرية 16-25 سنة و الفئة العمرية 26-45. أشارت النتائج أيضاً إلى أن 56% من حجم الأسر الكلى يعملون في الأنشطة المزرعية والنساء يمثلن 40% منهم.

أوضحت النتائج كذلك أن متوسط المساحة المخصوطة في النظام التقليدي المطرى بلغ حوالي 18 فدان مع ملاحظة أن متوسط المساحة المزروعة للأسرة تنخفض بنسبة 66% عند وقت الحصاد. المحايل الرئيسية بمنطقة الدراسة هي الذرة، الدخن، السمسم والفول السوداني، حيث تزرع الأسر الذرة بنسبة بلغت سبعاً وخمسين وساعياً وسبعين بالمائة من جملة الأراضي المزروعة في النظامين التقليدي المطرى والنظام شبه الآلي على التوالي. وهنالك محاصيل ثانية تكمن في الاستهلاك العائلي.
ويتم في بعض الأحيان بيع الفائض منها في الأسواق المحلية مثل اللوبيا والكركدى والذرة الشامية والبامية والقرع.

الدخل من خارج المزرعة مثل (طق الصمغ العربي والتجارة الصغيرة) والدخل من العمل شبه الماهر يعتبر من المصادر الرئيسية للدخل في النظام التقليدي حيث بلغت نسبتهما 32 و29% على التوالي. بالنسبة للنظام المزرعي شبه الآلي نجد أن الدخل من الأبدى العاملة الماهرة أحرز نسبة عالية بلغت 76%.

أشارت نتائج الدراسة إلى أن كل الأسير في النظامين التقليدي وشبه الآلي يقومون بتربية الحيوانات، أما بالنسبة للنظام المزرعي التقليدي فإن نسب الحيوانات بلغت 33% للإبل و14% تمثل الماشية، الماعز والضأن على التوالي، أما الإبل والحمير فتستخدم للنقل والترحيل حيث نجد أن الأسر الغنية تمتلك الإبل بنسبة 6%، بينما غالبية الأسر تستخدم الحمير بنسبة بلغت 42%؛ حيث نجد أن 40% من الأسر في نظام الزراعة المطرية شبه الآلي يمتلكون الماشية و13% الماعز و27% الضأن و13% الحمير.

إن المقارنة بين النظامين الرئيسيين تتعكس في الربح الإجمالي وصافي الدخل ويثبت هذا أن النظام المزرعي المطرية التقليدي أفضل بكثير من نظام الزراعة المطرية شبه الآلي ومثال ذلك أن إجمالي الدخل الناتج من الفدان في النظام المطرية التقليدي يعادل ثلاث مرات النظام المطرية شبه الآلي، بينما إجمالي الربح للفدان وصافي الدخل يساوي ضعف النظام شبه الآلي.

خلصت الدراسة إلى بعض التوصيات تتمثل ضرورة التركيز على التوسع الرأسى للإنتاج عن طريق المدخلات الزراعية الحديثة.